

Hand

and

His

Smith

1781

His

- 581

J.

Supplement to Subtraction

questions

1 What is the difference
between 78360 and 5421
5421
72939 proof

From a piece of cloth that
measured 671 yards there
were sold 273 yards how many
yards should there remain

671
273
418 Ans

There are two numbers whose sum
what number is that which difference
is 345 the greater number taken
from 175 Leaves 96 is 862
I demand the Less number Ans 487

2 862
Ans 375
487 proof

The capture of General
Curquoyne and his army
happened in the year 1777
that of Cornwallis is 1781 how
many years between these events

1781
1777
Ans 004

Suppose you should Lend a
neighbor 2765 dollars at a
certain time and he should pay
you 973 at another how much
would remain due

2765
973
1792

Supposing a man to have been
born in the year 1745
how old was he in 1799
1745

Ans 54 years

What number is that to which
if you add 489 it will be

6350
489
Ans 5861

Simple Multiplication

Rule 1

Place the numbers as in subtraction the larger number uppermost with units under units. then draw a line below.

When the multiplier does not exceed 12 begin at the right hand of the multiplicand and multiply each figure containing in it by the multiplier setting down all over even tens and carrying as in addition

Examples

1. Multiply. 5291 by 3

$$\begin{array}{r} 5291 \\ \times 3 \\ \hline 15873 \end{array}$$

2 multiply 3602 by 12

$$\begin{array}{r} 3602 \\ \times 12 \\ \hline 7204 \\ 3602 \\ \hline 43224 \text{ proof} \end{array}$$

What is the product of 4175 multiplied by 37

$$\begin{array}{r} 4175 \\ \times 37 \\ \hline 29225 \\ 12525 \\ \hline 154475 \end{array}$$

Ans

In this example as the multiplier exceeds 12 therefore you must multiply by each figure separately. first by the units (7) last in the manner of the other examples. secondly, by the tens (3) in the same way excepting only that the first figure of the product in the multiplication by 3. must be placed under the 3 that is under the figure by which you multiply. Lastly add these two product together and the sum of them is the answer

Proof

Multiplication may be proved by division but a method more concise and easy often practised by accountants and which I shall recommend is called

multiply 765302 by 65

3826510

4591812

65) 47744630 (765302 proof

455

424

390

344

325

196

175

130

130

multiply 62375

84

249500

477000

84) 5237500 (62375

504

199

168

315

252

630

588

420

420

000

multiply 37846 by 235

235

789230

113538

75692

88938100

Simple Multiplication

What is the product of 14356 multiplied by 648

$$\begin{array}{r}
 114848 \\
 57424 \\
 85136 \\
 \hline
 648 \overline{) 93956} \quad 648 \overline{) 14356} \\
 \underline{648} \\
 2822 \\
 \underline{2572} \\
 2306 \\
 \underline{1944} \\
 3628 \\
 \underline{3240} \\
 3888 \\
 \underline{3888} \\
 \hline
 \end{array}$$

What is the product of 93956 multiplied by 3704

$$\begin{array}{r}
 375824 \\
 657692 \\
 281868 \\
 \hline
 348013024
 \end{array}$$

$\begin{array}{c} 4 \\ 5 \end{array}$
 $\begin{array}{c} 4 \\ 5 \end{array}$
 proof

Simple Multiplication

Contractions and varieties in Multiplication

Any number which may be produced by the multiplication of two or more numbers is called a composite number. Thus 15 which arises from the multiplication of 5 and 3. (3 times 5 is 15) is a composite number and these numbers 5 and 3 are component parts. If the multiplier be a composite number multiply first by one of the component parts and that product by the other the last product will be the answer.

Examples

Multiply 67 by 15 (Three times 5 is 15)
first by 5 one of the component parts
$$\begin{array}{r} 335 \\ 3 \\ \hline 1005 \end{array}$$

The other component part
product of 67 multiplied by 15

Multiply 367 by 48 (17616)
8 one of the component parts
$$\begin{array}{r} 2936 \\ 6 \\ \hline 17616 \end{array}$$

the other component part
product of 367 multiplied by 4

Supplement to Multiplication

Exercise

There is a certain town which contains 145 houses each house two families and each family 6 inhabitants how many are the inhabitants of the town Ans 1740

$$\begin{array}{r}
 145 \\
 \times 2 \\
 \hline
 290 \\
 \times 6 \\
 \hline
 1740 \text{ Ans}
 \end{array}$$

$$\begin{array}{r}
 52 \\
 \times 2 \\
 \hline
 104 \\
 \times 5 \\
 \hline
 520 \text{ dollars}
 \end{array}$$

If the price of wheat be 1. dollar per bushel and 1/4 bushels of wheat make 1 barrel of flour what will be the price of 175 barrels of flour Ans 700

$$\begin{array}{r}
 4 \\
 \hline
 700 \text{ dollars}
 \end{array}$$

How many

How much wheat will 36 men thresh in 37 days at 5 bushels per day each man

$$\begin{array}{r}
 37 \\
 \times 5 \\
 \hline
 185 \\
 \times 36 \\
 \hline
 1110 \\
 \times 555 \\
 \hline
 6660 \text{ Bushels}
 \end{array}$$

Simple Division

Rule

Assume as many figures on the Left hand of the dividend as contain the divisor once or oftener find how many times they contain it and place the answer as the highest of the quotient

Multiply the divisor by the figure you have found and place the product under that part of the dividend from the figures above it

Bring down the next figure of the dividend to the remainder and divide the number it makes up as before

When you have brought down a figure to the remainder if the number it makes up be still less than the divisor a cipher must be place in the quotient and another figure brought down.

Examples

First divide 127 by 5

$$\begin{array}{r} \text{Divisor } 5 \overline{) 127} \quad (25 \text{ quotient} \\ \underline{10} \\ 27 \\ \underline{25} \\ 2 \end{array} \quad \begin{array}{l} 127 \\ 25 \end{array} \text{ proof}$$

Simple Division

Examples

divide 7012 by 52

$$\begin{array}{r}
 52 \overline{) 7012} \quad 134 \\
 \underline{52} \\
 181 \\
 \underline{156} \\
 252 \\
 \underline{208} \\
 44
 \end{array}$$

in this operation
it is left for the
schollar to trace the steps
of procedure without hav-
ing them particularly
pointed out to him by
words

Division is proved by multiplication

Rule
Multiply the divisor and quotient together and add
the remainder if there be any to the product if
the work is ~~wright~~ right the sum will be then equal
to the dividend

The quotient was 134 Multiply ^{together} them

$$\begin{array}{r}
 \text{Divisor} \quad \quad \quad 52 \\
 \quad \quad \quad \underline{268} \\
 670 \\
 \quad \quad \quad 44 \text{ remainder added} \\
 \hline
 7012 \text{ proof}
 \end{array}$$

Simple Division

Divide 17354 by 86

$$\begin{array}{r}
 43 \overline{) 17354} \quad 361 \\
 \underline{144} \\
 295 \\
 \underline{258} \\
 77 \\
 \underline{48} \\
 26
 \end{array}$$

proof

Division 974932 by 365 remainder

$$\begin{array}{r}
 365 \overline{) 974932} \quad 2671 \text{ quotient} \\
 \underline{730} \\
 2449 \\
 \underline{2190} \\
 2593 \\
 \underline{2555} \\
 332 \\
 \underline{365} \\
 332
 \end{array}$$

proof

Remainder 332

When the divisor is 10. 100. 1000. or 1 with any number of cyphers annexed cut off as many figures on the right hand of the dividend as there are cyphers in the divisor the figures which remain of the dividend compose the quotient cut off the remainder

Divide 1576 by 10

$$\begin{array}{r}
 157 \overline{) 1576} \quad 157 \text{ Remainder} \\
 \underline{1570} \\
 6
 \end{array}$$

Supplement to Division
Examples

Suppose an estate of 36582

How many Dollars to be divided among 13 Sons how much would each one receive

$$\begin{array}{r}
 10 \overline{) 36552} \quad 2814 \\
 \underline{26} \\
 105 \\
 \underline{104} \\
 15 \\
 \underline{13} \\
 22 \\
 \underline{22} \\
 02 \\
 \underline{00} \\
 00
 \end{array}$$

An army of 15,000 men having
plundered a city and took 2825,000
dollars what was each mans share

$$\begin{array}{r}
 15000 \\
 \hline
 252500 \quad 168 \\
 15000 \\
 132500 \quad 15000 \\
 120000 \quad 540000 \\
 1250000 \\
 120000 \quad 2525000 \quad \text{4 years} \\
 5000
 \end{array}$$

if 412 eggs be packed in 34
casks how many in a cask

$$\begin{array}{r} 34) 4412 \quad (218 \\ \underline{68} \\ 61 \\ \underline{24} \\ 212 \\ \underline{212} \\ 0 \end{array}$$

Compound Addition

Compound Addition is the adding of numbers which consist of articles of different value as pounds shillings pence and farthings called different denominations the operations are to be regulated by the value of the articles which must be learned from the tables

Rules for compound addition

Place the number so that those of the same denomination may stand directly under each other add the first column or denominations together and carry for that number which it takes you the same denomination to make one of the next higher if needed in this manner with all the columns till you come to the last which must be added as in simple addition

$$\begin{array}{r} \text{L} \quad \text{S} \quad \text{d} \quad \text{q} \\ 51 : 17 : 5 \\ \hline \end{array}$$

$$13 : 3 : 8$$

$$5 : 16 : 11$$

$$50 : 18 : 6$$

$$19 : 0 : 7$$

$$30 : 18 : 0 \text{ pence}$$

$$\begin{array}{r} \text{L} \quad \text{S} \quad \text{d} \quad \text{q} \\ 17 : 4 : 11 : 1 \\ \hline \end{array}$$

$$26 : 15 : 3 : 0$$

$$8 : 1 : 7 : 3$$

$$53 : 1 : 10 : 0$$

$$34 : 16 : 10 : 3$$

$$53 : 1 : 10 : 0$$

$$\begin{array}{r} \text{L} \quad \text{S} \quad \text{d} \quad \text{q} \\ 311 : 15 : 6 : 2 \\ \hline \end{array}$$

$$5 : 7 : 4 : 1$$

$$65 : 3 : 2 : 1$$

$$7 : 0 : 5 : 3$$

$$452 : 6 : 0 : 2$$

$$20 : 11 : 0 : 0$$

$$454 : 6 : 6 : 2$$

Compound Addition

of Troy weight

3. Troy weight are weight gold silver jewels ecclesiaries and Liquors
Table

27 grains grs	}	make one	}	apenny weight marked			apenny
20 penny weights				ounce			cs
12 ounces				pound			lb
26 $\frac{oz}{12}$ $\frac{pwt}{20}$ $\frac{grs}{24}$				L	$\frac{oz}{12}$	$\frac{pwt}{20}$	
70 : 10 : 13 : 4				151	7	17	
3 : " : 7 : 16				6	5	6	
25 : 6 : 6 : 5				25	0	14	
7 : 3 : 6 : 2				3	7		
7 : 11 : 7 : 3				186	4	22	
8 : 12 : 13 : 23				34	4	3	
7 : 11 : 7 : 3				186	4	22	

$\frac{oz}{12}$	$\frac{pwt}{20}$	$\frac{grs}{24}$	
7	14		23
2	0		6
11	13		5
10	12		7
32	1	2	17
24	5		18
32	0		17

Compound Addition

2 Avowdus pairs weight

16 drams	} make one	ounce marked oz
16 ounces		pounds ----- Lb
28 pounds		quarters of a hundred weight gr
4 quarters		100 weight or 112 pounds - - - - - cwt
20 hundred weights		Ten T

Examples

T	cwt	gr	Lb	oz	dr
20	14	28	16	16	
186	3	2	25	11	8
4	17	0	23	7	6
1	8	3	7	2	5
2	3	1	16	5	11
202	13	6	16	10	14
16	9	1	18	15	6
202	13	0	16	10	14

T	cwt	gr	Lb	oz	dr
20	14	28	16	16	
801	3	2	25	11	8
7	19	3	14	5	6
86	2	0	6	0	15
3	7	1	0	6	4
898	12	3	18	8	1
97	9	0	20	12	9
895	12	3	18	8	1

Compound Addition of Time

60 seconds	s	} make one	minute	marked	m
60 minutes			hour		h
24 hours			day		d
7 days			week		w
4 weeks			month		mo
12 months			fulian year		y

years mo w d h m Sec
 10 : 10 : 3 : 6 : 23 : 57 : 43

28 : 7 : 2 : 5 : 16 = 28 : 32

39 = 6 : 1 : 3 = 17 : 38 = 11

87 = 4 : 0 = 1 : 14 = 15 : 17

172 : 3 : 0 = 4 : 0 = 19 : 43

155 : 5 : 0 = 4 : 0 = 22 : 0

172 : 3 : 0 = 4 : 0 = 19 : 43

of Cloth measure Table

2 inches one fifth in

4 nails or 2 inches

4 quarters of a yard or 36 in

3 quarters of a yard or 27 in

5 quarters of a yard 45 in

6 quarters of a yd or 54 in

4 quarters 1 inch and 1 fifth

3 quarters 2 thirds

} make one	naill	marked	na
	quarters		qr
	yards		yd
	ell	flanders	ell
	ell	english	ell
	ell	french	ell
	ell	scotch	ell
	spanish	even	

Cloth measure

yd	q ^r	na	EE:	q ^r	na
14	3	3	14	3	2
36	1	2	56	1	3
7	0	1	7	2	2
15	3	2	15	2	0
74	1	0	101	4	3
59	1	1	52	1	1
74	1	0	701	4	3

Com Long measure

By Long measure are measured distances on any thing where Length is considered without regard to b^{ri}gth

3 barley corns	make one	inch marked	in
12 inches		foot	ft
3 feet		yard	yd
5 1/2 yards		3 good perch or pole	pol
40 poles		furlong	fur
8 furlongs		mile	mile
69 1/2 statute miles nearly		Degree of a great circle	

360 Degrees

A great circle of the earth

deg	mi	fur	pol	ft	in
160	57	7	26	15	11

124:53:6:18:7:6:1

79:36:1:7:9:10:0

4:7:3:0:3:2:1

477:16:2:13:3:4:1

205:27 1/2:2:26:3 1/2:6:2

477:16:2:13:3:6:1

Land or Square measure

By square measure are measured all things that have Length and Breadth

144 inches	} make one	Square foot	in
9 feet		yard	ft
2724 feet or 30 1/4 yards		perch	spul
40 poles		Rood	rood
4 acres 160 rods		acre	2 acres
or 4840 yards		mile	
640 acres	Example		

acres	rod	pole	ft	in
4	140	2724	144	
376	3	36	93	121
568	7	27	58	76
247	2	35	61	24
1193	0	16	213	77
816	0	22	119	100
1193	0	16	213	77

Solid Measure

By Solid measure are measured all things that have Length Breadth and thickness

1728 inches	} make one	foot	ft
27 feet		yard	yd
40 feet of round timber		ton or load	
or 32 feet of square timber			
128 solid feet is 4 in length		cord of wood	
4 in breadth 4 in height			

Solid Measure

ft			Examples cords			ft	in
1	1	40	1723	2	123	1723	1723
56	5	37	229	37	118	1021	
19	26	1207		3	55	437	
36	17	54		18	27	657	
57	33	6		29	86	124	
179	33	1496		41	32	513	
113	36	1267		51	41	1220	
179	33	1495		91	32	513	

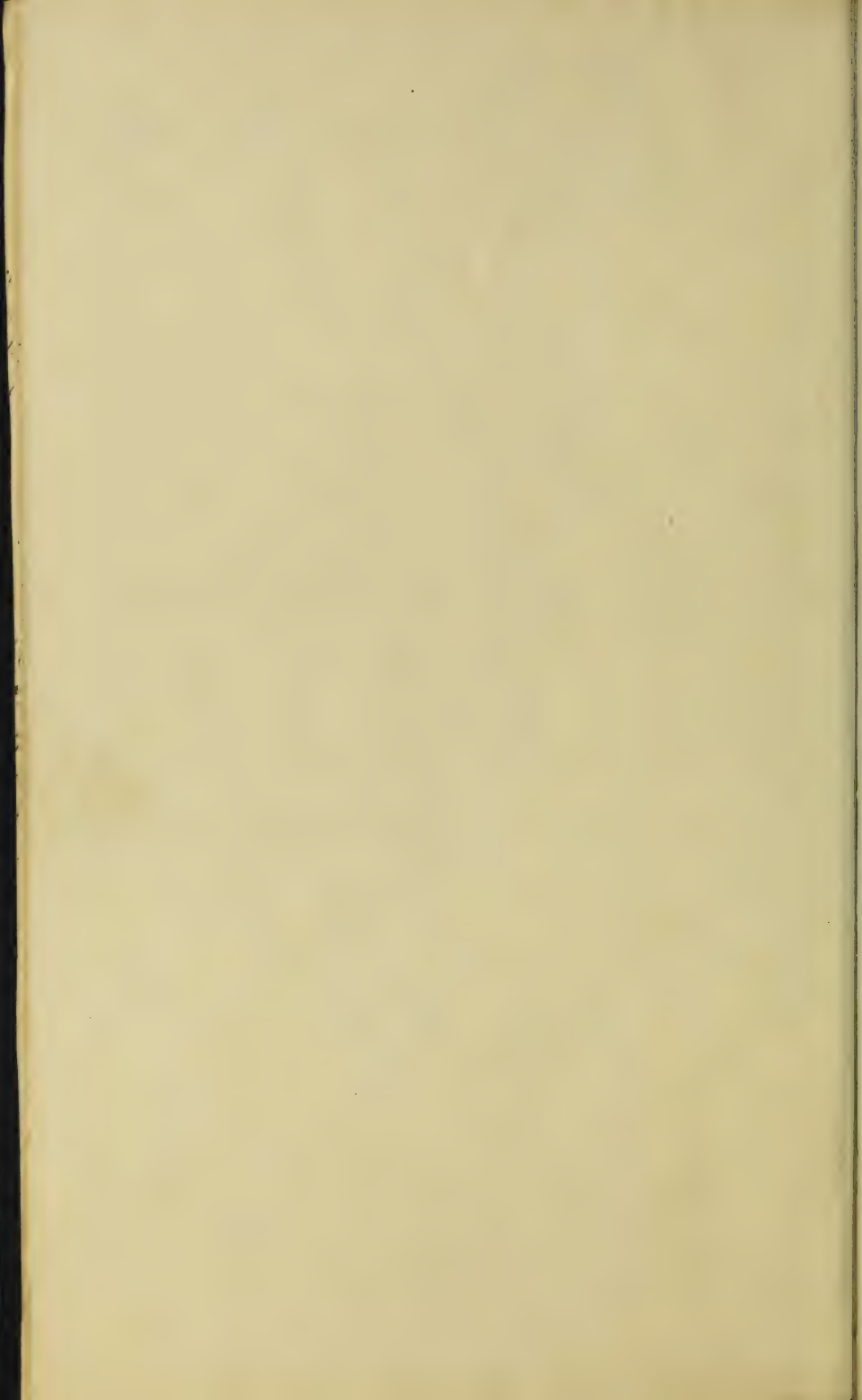
of wine Measure

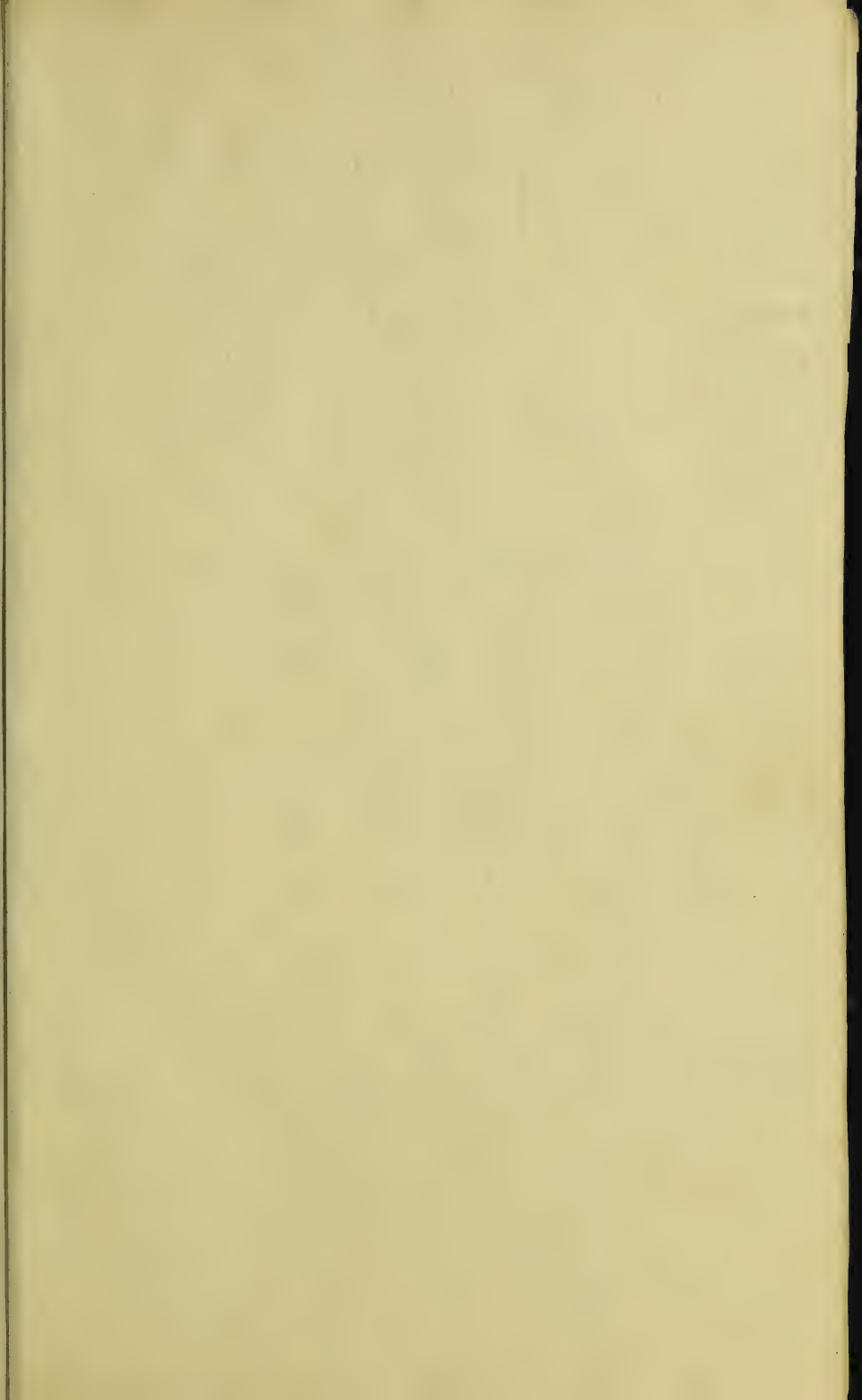
Cy wine measure are measured run brandy, sperry & cider.
Mund vinegar and oil

Table

2 pints	} make one	quart marked	qt
4 quarts		gallon	gal
10 gallons		anchor of brandy	anc
18 gallons		runlet	run
36 gallons		Half a hogshead	hhhd
52 gallons		tierce	tier
63 gallons		hogshead	hhhd
2 hogsheads		pipe or butt	pipe or
2 pipes	} T	ton	T
		hhhd gal	
	4	63	94
		pts	pts
		2	2

86	2	54	3	1
35	1	36	1	0
17	0	29	2	1
23	2	12	1	0
162	3	11	0	0
76	0	15	0	1
162	3	11	0	0





Compound Addition of ale or beer measure

Table

2 pints	}	make one	quart	marked	qts
4 quarts			gallons		gal
5 gallons			firkin of ale in London	a fir	
8 gallons			firkin of ale or beer	for	
9 gallons			firkin of beer in London	6 p	
2 firkins			hilderkin		hill
2 hilderkins			barrel		bar
1½ Barrels or 54 gallons			hogshead of beer		hhhd
2 barrels			spunchoon		spun
3 barrels or 2 hogshead			sputt		sputt

hhhd	gal	qts	Example	gal	qts
	$\frac{1}{2}$	$\frac{1}{4}$	lifer	$\frac{1}{2}$	$\frac{1}{4}$
327	48	2	23	6	2
28	50	3	45	2	3
173	24	1	08	7	1
27	18	0	36	8	0
557	13	2	204	6	2
229	28	0	181	0	0
557	13	2	204	6	2

of Dry Measure

By dry measure are measured all dry goods such as corn wheat seed fruit roots salts coal &c

of dry Measure

2 pints	quart	marked	qts
2 quarts	peck		pk
2 pecks	gallon		gal
2 gallons	peck		pk
4 pecks	bushel		bush
2 bushels	Strike		str
2 Strikes	corn		co
2 corns	quarter		qs
4 quarters	Chaldron		ch
4 quarters	Chaldron in London		
5 quarters	wey		wey
2 weys	Last		Last

Example				ch	bu	pk	qs
bu	qs	pk	qs		32	4	5
27	2	6	1	37	16	2	5
18	8	7	0	26	28	3	7
20	0	1	1	18	12	1	0
19	1	3	0	17	25	3	6
87	1	2	0	100	19	3	2
89	2	3	1	63	3	0	5
87	1	2	0	100	19	3	2

Rule for Compound subtraction

Place these numbers under each other which are of the same denomination the Less being below the greater being, with the Least denomination and if it exceed the figure over it borrow as many units as make one of the next greater Subtract it therefrom and to the difference add the superior figure remembering, always to add one to the next superior denomination for that which you borrowed

Compound Subtraction

Proof in the same manner as simple ^{act} subtraction

Supposing a man to have Lent 155:10:7d and to have received again of his money 93:15:0 how much remains due

$$\begin{array}{r}
 \text{L} \quad \text{S} \quad \text{d} \\
 155:10:7 \\
 93:15:0 \\
 \hline
 62:15:7 \\
 155:10:7
 \end{array}$$

$$\begin{array}{r}
 \text{L} \quad \text{S} \quad \text{d} \\
 310:0:0 \\
 55:15:0 \\
 \hline
 224:5:0 \\
 310:0:0
 \end{array}$$

$$\begin{array}{r}
 \text{L} \quad \text{S} \quad \text{d} \\
 6371:7:8 \\
 3661:10:4 \\
 2709:17:4 \\
 \hline
 6371:7:8
 \end{array}$$

of Troy weight

$$\begin{array}{r}
 \text{lb} \quad \text{oz} \quad \text{gr} \\
 75:5:16:13 \\
 3:9:17:5 \\
 12:10:14:7 \\
 75:8:16:13
 \end{array}$$

of Avoirdupois weight

$$\begin{array}{r}
 \text{cwt} \quad \text{qr} \quad \text{lb} \quad \text{oz} \quad \text{gr} \\
 0:11:14:7:13 \\
 1:5:1:15:9:8 \\
 5:5:3:25:13:11 \\
 11:1:1:14:7:3
 \end{array}$$

of time
years mo we:cl: h mi Sec
13 : 4 : 7 : 24 : 60 : 60

29 : 6 : 3 : 6 : 20 : 44 : 55

10 : 9 : 1 : 2 : 18 : 59 : 57

72 : 10 : 2 : 4 : 1 : 44 : 56

84 : 6 : 3 : 6 : 20 : 44 : 55

f Cloth Measure

yds qrs na EE qrs na
27 : 1 : 2 : 26 : 2 : 1

16 : 1 : 3

17 : 3 : 2

16 : 3 : 3

18 : 3 : 3

27 : 1 : 2

26 : 2 : 1

Long Measure

deg mi 6 qts 1 8 40 : 57 34 12 : 3
fur po yds ft in: lin

56 : 13 : 5 : 26 : 2 : 1 : 8 : 1

17 : 15 : 2 : 27 : 1 : 2 : 9 : 2

38 : 6 1/2 : 2 : 34 : 0 : 1 : 10 : 2

50 : 13 : 5 : 26 : 2 : 1 : 8 : 1

of Land or Square measure

acre Rods ft

rod ft in

17:1:17
16:1:16
1:0:1
17:1:17

18:16:11
10:201:130
17:864:25
18:16:11

Lines of Solid Measure

cord

ft in

45:29:186
19:34:1237
25:24:877
45:29:186

68:23:810
6:127:1529
61:23:009
68:23:810

of Wine Measure

hhd gal qts

butt hhd gal

69:19:2
37:25:3
51:58:3
59:19:2

63:1:16
29:1:10
34:0:0
63:1:16

Dry measure

alc and linen measure

bu gal qt
51:1:2
5:1:4
55:3:6
51:1:2

69:19:2
37:25:3
51:48:3
89:19:2

Reduction

Reduction teaches to bring or exchange numbers of one denomination to others of different denominations retaining the same value

it is of two kinds

When high denominations are to be brought into Lower as pounds into shillings pence and farthings it is then called reduction descending and is performed by multiplication

When lower denominations are to be brought into higher as farthings into pence or into pence shillings and pounds it is then called reduction ascending and is performed by division

Reduction Descending Rule

Multiply the highest denomination by that number which it takes of the next less to make one of that greater; so continue to do till you have brought it as low as your question requires

Examples

in £ s d far
17 13 6 3

20
353

12
412

353 2
4244

4) 159711
12) 42423 gr

20) 35316 d
17) 135

Reduction

$\text{£ } 10 \text{ s. } 4 \text{ d. } \frac{1}{4}$ how many farthings
in $7 \text{ l. } 14 \text{ s. } 6 \text{ d.}$

20
154
12

314

154
185

4

47417

47417 1/4

20154/0 d

714

in 29 guineas at $\text{£ } 2 \text{ s.}$ how many farthings

26

232

56

512

12

9744

4

farthings

4738476

429744/6

28512/0 d

729/0

$\text{£ } 173 \text{ s. } 15$ how many sixpences

20

3475

2

206950 sixpences

203475/0

173/15

in 12 crowns at $6 \text{ s. } 7 \text{ d.}$ how many pence and farthings

12

6

79

12

948 d

4

3792

Reduction

in 571: eagles at 10 dollars each how

$\frac{10}{5710}$ many shillings three pence and

$\frac{6}{40260}$ farthings

$\frac{4}{101040}$ Shillings

$\frac{3}{483120}$ three pences

$\frac{4}{1932480}$ pence

$\frac{4}{1932480}$ farthings

Reduction Ascending

Rule

Divide the Lowest denomination given by that number which it takes of the same to make one of the next higher and so continue to do till you have brought it into the denomination which your question requires

Examples

$\frac{\text{farther}}{16711}$ farthings how many pounds

$\frac{4}{16711}$

$\frac{4}{424273}$ pence

$\frac{20}{35376}$ pence

$\frac{21}{1713}$ Shillings

Reduction Ascending
in 1765 pence how many pounds

$$\begin{array}{r} 12 \overline{) 1765} \\ 20 \overline{) 177} \quad 10 \\ \hline 21 \overline{) 7} \text{ Shillings} \end{array}$$

in 35976 farthings how many guineas

$$\begin{array}{r} 4 \overline{) 35976} \\ 12 \overline{) 9744} \\ 28 \overline{) 812} \\ \hline 29 \text{ guineas} \end{array}$$

in 6950 pence how many pounds

$$\begin{array}{r} 2 \overline{) 6950} \\ 2 \overline{) 3475} \\ \hline 21 \overline{) 7315} \text{ Shillings} \end{array}$$

in 3792 farthings how many crown

$$\begin{array}{r} 4 \overline{) 3792} \\ 77 \overline{) 948} \\ \hline 12 \end{array}$$

Reduction Ascending

in 48960 farthings how many
pence three pence sixpences and dollars

$$\begin{array}{r}
 48960 \\
 \hline
 3 \overline{) 12240} \text{ pence} \\
 12 \overline{) 4080} \text{ three pence} \\
 12 \overline{) 2640} \text{ sixpences} \\
 \hline
 176 \text{ dollars}
 \end{array}$$

in 6952 three pence how many pistoles
at 228 Shillings each

$$\begin{array}{r}
 6952 \\
 \hline
 22 \overline{) 1738} \text{ Shillings} \\
 \text{Ans } 79 \text{ pistoles}
 \end{array}$$

Reduction Ascending and Descending

in 57 moidores at 36 Shillings each

30 how many dollars

$$\begin{array}{r}
 342 \\
 171 \text{ Shillings} \\
 \hline
 2052 \\
 342 \text{ dollars}
 \end{array}$$

in 75 pistoles how many pounds

$$\begin{array}{r}
 22 \\
 20 \overline{) 1650} \\
 \hline
 282 \text{ 108 shillings}
 \end{array}$$

Reduction Ascending and ^{descending} money

in 73 pounds how many guineas

$$\begin{array}{r} 20 \\ 28 \overline{) 460} \text{ Shillings} \\ \underline{56} \text{ Guineas } 4 \text{ Shillings} \end{array}$$

in 63 pounds 5 guineas how many

$$\begin{array}{r} 20 \quad 28 \\ 1260 \text{ Shillings } 140 \text{ dollars} \\ \underline{1260} \\ 6 \overline{) 1400} \\ \underline{233} \text{ dollars } 2 \text{ Shillings} \end{array}$$

in 172 moidores how many eagle dollars and nine pences of each the like number 10 dollars make 5 one eagle multiply 172 moidores by 36 ³⁰ Shillings 1 pence

$$\begin{array}{r} 36 \\ 1032 \\ \underline{516} \\ 6 \overline{) 5192} \text{ Shillings} \\ \underline{11032} \text{ dollars} \\ 8 \end{array}$$

$$\begin{array}{r} 36 \text{ Shillings make} \\ \underline{36} \text{ one moidores} \end{array}$$

$$\begin{array}{r} 39 \overline{) 1525} \text{ pences } 172 \\ \underline{301} \end{array}$$

246

178

Remainder of 68 pences

Reduction Key weight

in 16 pounds of silver how many spoons

$$\begin{array}{r} 12 \\ 240 \\ \hline 112 \end{array}$$
 each weighing 5 oz $\frac{20}{10}$ of a pound

$$\begin{array}{r} 20 \\ 110 \\ \hline 220 \end{array}$$
 of a pound

$$\begin{array}{r} 20 \\ 220 \\ \hline 110 \end{array}$$
 of a pound

in 4560 grains of silver how many teaspoons

$$\begin{array}{r} 4560 \\ 4560 \\ \hline 240 \end{array}$$
 each one ounce

$$\begin{array}{r} 24 \\ 20 \\ \hline 480 \end{array}$$
 grains make one pound

$$\begin{array}{r} 240 \\ 240 \\ \hline 480 \end{array}$$
 of a pound

in 14048 oz how many hundred weight

$$\begin{array}{r} 15 \\ 25 \\ \hline 375 \end{array}$$
 pounds

$$\begin{array}{r} 31 \\ 11 \\ \hline 42 \end{array}$$
 quarters 10 pounds

in 470 boxes of sugar each 20 pounds how many

$$\begin{array}{r} 20 \\ 2520 \\ \hline 126 \end{array}$$
 hundred

$$\begin{array}{r} 126 \\ 126 \\ \hline 252 \end{array}$$
 hundred & quarters 12 pounds

Reduction

Arvoindupois weight
cut for 25 lb each 17 pounds
in 17 = 1 ÷ 6 of sugar how many pounds

$$\begin{array}{r} 17 \\ 17 \overline{) 289} \\ \underline{34} \\ 25 \\ 558 \\ 135 \text{ am} \\ 17193 \overline{) 114} \end{array}$$

off Time

in 121812 seconds how many hours
60) 121812
60) 2030 min min s
Ans 33 hours 50 min 12 seconds

Supposing a man to be 21 years old how many
seconds has he lived allowing 365 days 6 hours
to a year

$$\begin{array}{r} 365 \div 6 \\ 21 \text{ days} \\ 365 \text{ hours} \\ 730 \text{ days} \\ 7665 \text{ hours} \\ 29 \text{ days} \\ 30660 \text{ hours} \\ 123326 \text{ days} \\ 1346560 \text{ hours} \end{array}$$

Ans 116451600 seconds
662707600

Reduction of Time

How many minutes from the commencement of the
war between America and England April 1st 1775 to
the settlement of a general peace which took place
January 20th 1763 = 12¹/₂ ^{years} 20

$$\begin{array}{r} 1775 \quad 4 \div 19 \\ \hline 7 \div 9 = 1 \end{array}$$

$$\begin{array}{r} 30 \\ \hline 271 \end{array}$$

7 years by 6 hours

$$\begin{array}{r} 6 \\ \hline 42 \end{array}$$

365

1 day by 24

$$\begin{array}{r} 2535 \\ \hline 2764 \end{array}$$

2764 days by 24 hours

$$\begin{array}{r} 2531 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 11325 \\ \hline 56622 \end{array}$$

$$\begin{array}{r} 77542 \\ \hline 67956 \end{array}$$

$$\begin{array}{r} 67956 \\ \hline 60 \end{array}$$

$$\begin{array}{r} 4672160 \end{array}$$

11 April 11

May 31

June 30

July 31

August 31

September 30

October 31

November 30

December 31

January 20

— 276 days

Reduction of Time

in 413280 minutes how many weeks

$$\begin{array}{r}
 60 \overline{) 413280} \\
 \underline{24) 6888} \\
 \underline{7) 237} \\
 41 \text{ weeks}
 \end{array}$$

How many times does the wheel which is 12 feet 6 in
in circumference turn round in the distance of 120 miles

$$\begin{array}{r}
 120 \text{ miles} \\
 \underline{1200 \text{ furlongs}} \quad \text{ft } 120 \\
 \underline{40} \quad 18.6 \\
 48000 \text{ poles} \quad 12 \\
 \underline{16 \frac{1}{2}} \quad 42 \\
 \phantom{16 \frac{1}{2}} \underline{268000} \quad 15 \\
 \phantom{16 \frac{1}{2}} 424 \quad 222 \text{ inches} \\
 \phantom{16 \frac{1}{2}} \underline{792000} \\
 \phantom{16 \frac{1}{2}} \underline{12} \\
 \phantom{16 \frac{1}{2}} \underline{1584000} \\
 \phantom{16 \frac{1}{2}} \underline{792} \\
 222 \overline{) 9504000} \text{ of } 42810 \text{ miles} \\
 \underline{660} \\
 \underline{624} \\
 \underline{336} \\
 \underline{1500} \\
 \underline{1716} \\
 \underline{240} \\
 \underline{222} \\
 \text{remainder of } 180 \text{ inches}
 \end{array}$$

Reduction

How many barley corns will reach round the globe it being 360 degrees

$$\begin{array}{r}
 67\frac{1}{2} \\
 3240 \\
 2160 \\
 18 \\
 \hline
 25020 \\
 8 \\
 200160 \\
 40 \\
 8006400 \\
 16\frac{1}{2} \\
 40038400 \\
 80064 \\
 40032 \\
 132105600 \\
 12 \\
 264211200 \\
 1321056 \\
 1585267200 \\
 3 \\
 \hline
 Ans 4955501600
 \end{array}$$

Land in square measure

in ^{acres} 13:2 rods how many poles

$$\begin{array}{r}
 4 \\
 54 \\
 40 \\
 \hline
 Ans 2160 poles
 \end{array}$$

in 2852 rods how many acres

$$\begin{array}{r}
 40 \overline{) 2852} \\
 4 \overline{) 71} = 12 \text{ Rods} \\
 17 = 3 \text{ poles}
 \end{array}$$

Reduction

of solid measure

in 1296000 solid inches how many tons of hewn timber

1728)1296000

500
Ans 15 tons

in 5529600 solid inches how many cords of wood

1728)5529600

128)3200

Ans 25 cords

Dry measure

in 75 bushels of corn how many pints

4

300

8

2400

2

24800 pints

8)2400

1)300

15

Ans 300 pints

Supplement to Reduction

How many steps of 2 feet 5 inches will it require a man to take going from Leominster to Boston it being, 43 miles 1 ft in

$$\begin{array}{r}
 374 \\
 40 \\
 13760 \\
 16\frac{1}{2} \\
 52560 \\
 1376 \\
 1688 \\
 \hline
 227040
 \end{array}$$

$$\begin{array}{r}
 2:5 \\
 12 \\
 29
 \end{array}$$

2) 227040 12 113520
 227040 93947 Steps the Last

$$\begin{array}{r}
 261 \\
 \hline
 114 \\
 82 \\
 274 \\
 261 \\
 138 \\
 116 \\
 220 \\
 203 \\
 17
 \end{array}$$

Steps will carry him into the town 17 inches

Let 10 dollars be distributed among three men in such manner that as often as the first has 5 shillings the second shall have 7 shillings and the third 9 shillings what will each one receive.

No 1	No 2	No 3
5	7	9
21) 350 (16 2/3	21) 90 (23 2/3	21) 30 (30 dollars
21	42	63
140	70	7
126	63	21) 21 (2
14	7	42
21) 42 (2		
84		

Supplement to Reduction

if a vintner be desirous to draw off a cype of
canary into bottles containing pints quarts and 2 quart
of each an equal number how many must he have

1 cpt	1 cype
2 cpt	<u>2</u>
4 quarts	<u>63</u>
7 cpts	<u>126</u>
	<u>4</u>
	504

71008 144 bottles

7
<u>30</u>
24
<u>28</u>
60

there are three fields one contains 7 acres another
ten acres and the other 12 acres and 1 rood how many
shares of 76 perches each are contained in the whole

7	rood
10	29
<u>12</u>	<u>4</u>
29 acres	117
	<u>40</u>

76) 4680
61 Shares 44 perches

Continued

There are 106 pounds of silver the property of three men of which A receives 17 lb 1002 19 ~~apunt~~ 19 grains of what remains B shares 15 7 grains so of ten as C shares 13 ~~apunt~~ what are the shares of B and C

Lb oz ~~apunt~~ gr
106 : 0 : 0 : 0

17 : 10 : 19 : 19

88 : 1 : 0 : 5

12

177

88

1057

20

21140

22

835630

42280

507365

487

3551555

4058920

2029460

799277086755

(309242)

24) 309245

20) 1288515

12) 64415

53

80255

88105

538755

344150

344150

344150

344150

344150

344150

344150

344150

344150

344150

344150

oz ~~apunt~~ gr

17 0 : 7

20

10

24

487

312

799

apunt 20

13

22

52

26 2 gr

Lb oz ~~apunt~~ gr A Share

88 1 0 5

53 8 7 5 B Share

34 4 15 0 C Share

Decimal Fractions

When the thing or things signified by figures are whole ones then the figures which signify even are called integers or whole numbers. But when only some parts of a thing are signified by figures as two thirds of any thing five eighths seven tenths &c. then the figures which signifies these parts of a thing being the expression of some quantity less than one are called fractions.

addition of Decimals

Rule

Place the numbers whether mixed or pure decimals each other according to the value of their places

Find their sum as in whole numbers, and point off so many places for decimals as are equal to the greatest number of decimals place in any of the given numbers

examples

What is the amount of 73:612 guineas 436 guineas 3:27 guineas 8632 of a guinea and 100:19 guineas when added together

$$\begin{array}{r}
 73:612 \\
 436: \\
 3:27 \\
 :8632 \\
 100:19 \\
 \hline
 613:9352
 \end{array}$$

$$\begin{array}{r}
 355:601 \\
 :3724 \\
 63:1 \\
 572:313 \\
 7:5462 \\
 \hline
 988:9326
 \end{array}$$

Required the sum of 37:821

$$\begin{array}{r}
 546:35 + 8:4 + 37:325 \quad 37:821 \\
 \hline
 546:35 \\
 8:4 \\
 37:325 \\
 \hline
 929:896
 \end{array}$$

the sum of

Subtraction of Federal money

From 863 dollars take 67:82
 863.17
 67.82
 remaind 795.35

2 From doll's 6.81 take 57.63
 6.81
 57.63
 \$123.57

Multiplication of Federal money

if flour be \$10.25 per barrel what
 27 will 75 barrels cost
 71 75
 2054
 \$246.375

Multiply \$76.35 by \$37.46
 37.46
 558 10
 3054 0
 53445
 22905
 \$2860.910

Division of Federal money

if 2720 bushels of wheat cost \$2961

how much is that a bushel
 bushels doll's do d c m
 2720) 2961 (1 0 3 5
 2720

Divide 3756
 equally among
 13 men what
 will each man
 receive 13)3756 (296.623

when the dividend
 consists of dollars
 only if there be a
 remainder after
 division of dollars must
 be annexed as in division
 of decimals

Divide \$16.75 by 27
 16.75
 53
 54

Reduction of Federal Money

case 1

to reduce pounds shillings pence and farthings to dollars

Rule

Set down the pounds and to the right hand write half the greatest even number the given shillings then consider how many farthings there are contained in the given pence and farthings and if the sum exceed 12 increase it by 1 or if it exceed 36 increase it by 2 which sum set down to the right hand of the half the greatest even number of shillings before written remembering to increase the second place or the place next to shillings by 5 if the shillings be an odd number to the whole sum then produce annex a cypher and divide the sum by 3 cut off the three right hand figures in the quotient which will be cents and mills the rest will be dollars

A little practice will make these operations extremely easy

in pounds how many dollars

$$3 \overline{) 763000} \\ \$254333 \frac{1}{3}$$

$$\text{in } 17:1:6 \frac{1}{2} \quad 3 \overline{) 17077} \\ 56923 \text{ m}$$

$$\begin{array}{r} 26 \\ + \\ 27 \\ \hline 53 \end{array} \quad \text{in } 109:3:8 \quad 3 \overline{) 1091183} \\ \$36319 \frac{1}{3}$$

Case 2

To reduce dollars cents and mills to pounds shillings pence and farthings
 Multiply the given sum by 3 cut off the four right hand figures which will be decimals of a pound the left hand figures will be the pounds to find the value of the decimals double the first figure for shillings and if the figure in the second place be 5 add another shilling then call the figures in the second and third places after deducting the 5 in the second place so many farthings adding 1 when they are above 12 and 2 when they are above 36

in 392.75 how many pounds
 Shillings pence and farthings

$$\begin{array}{r}
 392.75 \\
 \underline{3} \\
 11775 \\
 \text{Ans } \$117.1686\text{d}
 \end{array}$$

in 39.635 how many
 and Shillings pence

$$\begin{array}{r}
 39.635 \\
 \underline{3} \\
 117905 \\
 \text{Ans } \$117.9\frac{1}{2}
 \end{array}$$

Reduce 134 dollars 65 cents to pounds
 shillings pence and farthings

$$\begin{array}{r}
 134.65 \\
 \underline{3} \\
 40395 \\
 \text{Ans } \$134.103\text{d}
 \end{array}$$

Reduce dollars
 648 to pounds
 and Shillings

$$\begin{array}{r}
 45 \\
 \underline{2} \\
 45310\frac{1}{2} \\
 648 \\
 \underline{3} \\
 1944 \\
 \text{Ans } \$195\frac{1}{2}
 \end{array}$$

supplement to Federal Money Pence and farthings Example

1) a man dies leaving an estate of 71600
dollars, there are demands against
the estate of \$39876.74, the
residue is to be divided between 4 sons,
what will each one receive

$$\begin{array}{r}
 \text{Dolls.} \quad \text{cents} \\
 71600.00 \\
 39876.74 \\
 \hline
 7 \overline{) 31723.26} \\
 \$4531, 89 \text{ cts}
 \end{array}$$

2) a man sells 1225 bushels of wheat at
\$1.33 per bushel and receives \$93.76 for
transportation what does he receive in
the whole

$$\begin{array}{r}
 1225 \\
 1.33 \\
 \hline
 3675 \\
 3675 \\
 1225 \\
 \hline
 9376 \\
 \$1723, 01 \text{ cts}
 \end{array}$$

Reduce 375. 15: 6 1/2 d

Supplement to Federal money

Reduce 375.1 (1/2 to dollars

And cts

$$\begin{array}{r} 3 \overline{) 375.057706 \frac{1}{2} d} \\ \underline{1250} 256 28 \\ 51 74 \end{array}$$

in £1.135.6d how many dollars

$$\begin{array}{r} 3 \overline{) 27.68 \frac{3}{4}} \\ \underline{225} 61 \end{array}$$

Reduce £781: 27 to pounds shillings
pence and farthings

$$\begin{array}{r} £781: 27 \\ 3 4 \overline{) 307} \\ 234 3 81 \\ \underline{234} 78 7 \frac{1}{2} d \end{array}$$

cts
Reduce 498: 763 to pounds shillings
pence and farthings

$$\begin{array}{r} £498: 763 \\ 3 289 \\ \underline{1254} 63 \frac{1}{2} d \end{array} \quad \begin{array}{r} 28 \\ \underline{21} 63 \frac{1}{2} \\ 14 3 \end{array}$$

Simple Interest

General Rule

For one year multiply the principal by the rate from the product cut off the two right hand figures of the Dollar which will be cents those to the Left hand will be Dollars. or which is the same thing remove the separator from its natural place two figures towards the Left hand then all those figures to the Left hand will be dollars and those to the right hand will be cents mills and parts of a mill

Should there be a remainder in taking one ~~of~~ sixth of the days reduce it to a vulgar fraction for which take aliquot parts of the multiplicand. thus

if the remainder be 1 = $\frac{1}{6}$ ^{divid the multiplier} by 6
 if $2 = \frac{1}{3}$ by 3
 if $3 = \frac{1}{2}$ by 2
 if $4 = \frac{2}{3}$ by 3 twice
 if $5 = \frac{1}{2}$ and $\frac{1}{3}$ by 2 and 3

Examples

What is the interest to 365, 14, 6 for three years 7 months and 6 days

365 14 6
 3 years 7 months 6 days

12
 361

7 30
 2143 30
 2143 30

2790876
 365 14 6
 730292
 2790876

Continued

What is the interest for \$76.54 cts for 1 year 7 months and 11 days

$$\begin{array}{r}
 3 \frac{1}{2}) \$76.54 \\
 \underline{9.6} \\
 66.94 \\
 33.47 \\
 \underline{25.51} \\
 \$41.46
 \end{array}$$

$$\begin{array}{r}
 12 \\
 7 \\
 \hline
 19 \\
 18 \\
 \hline
 37 \text{ month} \\
 30 \text{ days} \\
 11 \text{ days} \\
 \hline
 41.46 \\
 \underline{36} \\
 5
 \end{array}$$

What is the interest of \$5.93 for 2 years and 8 months

$$\begin{array}{r}
 \$5.93 \\
 12 \\
 2 \\
 \hline
 23 \\
 16 \\
 232 \text{ (16 months)} \\
 35.58 \\
 57.38 \\
 \underline{29.4}
 \end{array}$$

What is the interest of \$67.62 cts for 3 years and 2 months 12 in a year

$$\begin{array}{r}
 3 \\
 36 \\
 2 \text{ months} \\
 67.62 \\
 19 \\
 \hline
 60.85 \\
 67.62 \\
 \hline
 \$128.47
 \end{array}$$

What is the interest of 91 cts for 27 years

$$\begin{array}{r}
 91 \\
 6 \\
 546 \\
 27 \\
 3822 \\
 1092 \\
 \$1,471.2
 \end{array}$$

What is the interest of \$2876.32 cents for 10 days

$$\begin{array}{r}
 3 \frac{1}{2}) \$2876.32 \\
 \underline{956.77} \\
 1919.55 \\
 \underline{2576.32} \\
 \$4783.86
 \end{array}$$

Simple Interest

What is the interest of \$137.84 for 2 years and 6 months at 5 cts

\$137.84	24
15	6 months
659 20	15
13784	75
6)201700	
34760	
5	
17,2300	

What is the interest of \$19.07 for 10 months 5 at 8 per cts

6139535	41015
6589	
\$5,271 2	

What is the interest of \$2.29 for one month 19 days at 3 per cent

\$2.29	6)440
5	15
38	
1832	
6)1870	
311	
3	
Ans 933 mills	

What is the interest of \$1600 for 1 year and 3 months

2)1567
14
365
\$1665
15
800
11200
\$120,000

What is the interest of \$18 for 2 years 12 days at 7 per cent

31818	12
121	
06	
36	
36	
185	
6)2205	
367	
7	
\$1509 mills	

Continued

What is the interest
of \$85.00 for 1 year
and 11 months

\$85.00 12
11.5 11 months
99.055 6)3015

5811
66,8265

2) \$78.36 cents
3 5.0
3918

391800
23508

\$2746514

2) 70.35
70
613

What is the interest of
\$861.12 for 9 months 25
days at 7 per cent

6) 861.12

49
74352
775008
344448

423444
715606
4449242

19.9
30
25.9
59

What is the interest
of \$17.68 cents for
11 years months 28 days

17.68 11
15.89
138.42
1057.90

What is the interest
of \$105.61 for 1 year
7 months and 6 days

105.61 3)1919
9.6
63366
95044
1013.656

What is the interest
of \$86 for 9 months

86 12
4.5
430
3440
3470

2) 16
7
2305

What is the interest
of \$512.30 cents for 2 years
8 months and 4 days

512.30 3)12.30
1.60
27676
27676
433300
412300
8130501

2) 12.10
12
4) 4 days

What is the interest
of \$178.36 for 5 years
10 months and 3 days

Method

... calculating the interest due upon bonds notes &c
when partial payments may at different times be made
as directed by the courts of Law in Massachusetts

Rule

Cast the interest up to the first payment and if
the payment exceed the interest deduct the excess
from the principal and cast the interest upon
the remainder to the time of the second payment if
the payment be less than the interest place it by
the itself and cast on the interest to the time of
the next payment and so on untill the payments
exceed the interest then deduct the
excess from the principal and proceed as before

Example

Suppose I should have a bond against 3 per 100
dollars 00 cents and 6 mills dated may 1, 1796 upon
which the following payments should be made viz

			month	days
1	December 23, 1796...	166.666.6		
2	July 10, 1797.....	16.66.6	6	15
3	September 1, 1798....	50.00.0	13	215
4	June 14, 1799.....	333.33.3	9	13
5	April 15, 1800.....	626.00.0	10	1
	What will be due upon it		17	18
				August 3, 1801

The sum on which the interest is to be cast with the interest and payment in columns thus

	principal dolls mills	time mo. days	interest dolls mills	payments dolls mills	excess dolls mills
1	1166,66 121,167	7 = 24	45,499	166,66,6	120,167
2	1045,499	6 = 15	33,47,3	16,66,6	
3	1045,499	13 = 21	71,61,6	50,00,0	
4	1045,499	9 = 13	49,31,2	333,333	
			154,96,6	399,99,9	245,093
5	245,093 570,406 579,517	10 = 1	40,15,3	620,00,0	579,517
	220,339	15 = 18	17,20,3		
The last remainder interest from the last payment					220,339 17,20,3
Sum due Aug. 1, 1801					42,37,76,2

2 Supposing a note of 867 dolls 33 cents dated January 6, 1799, upon which the following payments should be made viz

	principal dolls cents	time mo. days	interest dolls cents	payments dolls cents	excess dolls cents
1	867,33	32, 10	176,57,7	136,44	
2	867,33	24, 00	104,01,9	319,00	
3	867,33	8, 15	29,17,8	518,68	
What would be due July 11, 1801					
	156,75,1		214,65,3	153,44	130,78,1
4	686,54,3 488,56,2	18, 10	15,06,2		
The last remainder interest from the last payment					197,04,1 15,06,2
Sum due July 11, 1801					215,103

Supplement to it Interest

What is the interest
of two hundred and
six cents

33)200.6
66.8
66.8
133.6

What would 300 pounds
of pork cost at 15 cents
and $\frac{1}{2}$ of a cent per pound

300 $\frac{1}{2}$ 8300
5 37
1500 7
257

What is the interest of
nine cents for 45 years
7 months and 11 days

09 2) 1.811
6 30
51 11
45 0416
270 36
216 5
243 0 3/2) 0.9
331 3.6
216.30 64
03
54
27
1337

What is the interest
of 394 dollars 50 cents
per 3 years 6 months 11
days

3 12
36
412 6 months
11 days
333)294.50
210
9816
9816
294500
58900
62041.32

What will be the interest
of half a mill per 50 years

0.035 567
63003
060034761

What will be the
interest of 10 dollars
per 1 year 6 months
and 6 days

10 0611
10.6
10
100
1010

Supplement to Interest

As note of \$365.37 was given December 3, 1797 June 7, 1800 he paid 477.16 what was there due Sept. 11, 1800

Principal	Time	Interest	Payments	Excess
dolls cents	mo days	dolls mills	dolls cents	dolls mills
1 365,37	26, 4	55,04,9	477, 16	42, 11, 1
42, 11, 1			55,04,9	
2 323,25,9	3, 4	5,06,4	42, 11, 1	
The Last remainder		323,25,9		
Interest from the Last		5,06,4		
Sum due Sept 11, 1800		328,32,3		

As note of \$175 was given December 6 1798 on which was endorsed one years interest what was there due Jan. 1, 1803

Principal	Time	Interest	Payment	Excess
dolls	mo days	dolls cent	dolls cent	dolls mills
1 175	12, 1	10,50		
2 175	48, 25	42,72,9		
Principal		175		
Interest		32,22,9		

The sum due January 1, 1803 207,22,9

Supplement to simple interest

Cash \$56.75 was given June 6, 1801, on interest after 90 days; what was there due January 9, 1802

$$\begin{array}{r}
 2)56.75 \\
 \underline{25} \\
 2837 \\
 25375 \\
 11350 \\
 \hline
 \$1,4411
 \end{array}$$

The principal \$56.75
Interest after 90 days 44.1
due \$56.19.7

Time
months, days
8 3
3 months out
3 months 3 days
252
4 remainder for one month
36
3
1335
36
3

A note of two hundred three dollars and 17 cents was given Oct 5, 1808 on interest after 3 months January 5, 1809, he paid fifty dollar what was there due May 20 1811

dolls, cents	Time
The principal \$203.17	months, days
The payment \$50.00	
remainder 2) \$153.17	27 21
13,9	not by half the
7658	number of months
137853	
45951	The last principal \$153.17
15317	The interest 2,36
21,36721	
	due May 20 1811 \$174.53.1

Supplement to Simple Interest
 E's note of \$ 870, 05 cts was given
 Nov. 17, 1800, on interest after 90 days
 February, 11, 1805, he paid one hundred
 eighty, six dolls and six cents what
 was there due Dec. 23, 1807.

	principal		time		interest		payments		excess	
	dolls	cents	mon	days	dolls	mills	dolls	cents	dolls	mills
1	870	05	47	24	209	94	186	06		
2	891	93	34	12	153	41				
due december 23, 1807									\$1045	343

What is the interest of \$ 273, 57
 at 7 per cent for, 1 year and 10 days

$$\begin{array}{r}
 3/3) 273,57 \\
 \underline{61} \\
 9117 \\
 9117 \\
 \underline{27351} \\
 164106 \\
 \underline{1686645} \\
 281107 \\
 \underline{7} \\
 1967759
 \end{array}
 \qquad
 \begin{array}{r}
 3) 126 \\
 \underline{18} \\
 2100 \\
 \underline{6} \\
 4
 \end{array}$$

Simple Interest Simple Interest
 Supposing a note of \$317, 22, dated July
 5, 1797, on which were the following
 payments Sept, 13, 1799, \$205, 04, March
 10, 1800 \$46, 00 what was the sum due
 January 1, 1801

	Principal dolls. cent.	Time mo. days	interest dolls. mills	payments dolls. mills	exces dolls. mills
1	317, 22 166, 287	26, 8	41, 753	205, 04	166, 287
2	151, 633	5, 27	4, 47, 3	46, 00	71, 527
3	80, 10, 6	9, 21	3, 88, 5		

Sum due January 1, 1801 \$83, 99, 1

Single Rule of Three

The Single rule of three sometimes called the rule of proportion is known by having three terms given to find the fourth

1. State the question by making that number which asks the question the third term or putting it in the third place that which is the same name or quality as the demand the first term and that which is of the same name or quality with the answer required the second term

2. Multiply the second and third term together divide by the first and the quotient will be the answer to the question which is also the remainder will be in the same denomination in which you left the second term and may be brought into any other denomination required The chief difficulty that occurs in the rule of three is the right placing of the numbers or stating of the question this being accomplished there is nothing to do but to multiply and divide and the work is done

Example

Q^y 6 horses eat 21 bushels of oats in 3 weeks how many bushels will 20 horses eat in the same time

$$\begin{array}{r} 6 \quad 21 \quad 20 \\ \quad 20 \\ 6 \overline{) 420} \quad 70 \text{ bushels} \\ \underline{420} \end{array}$$

Single Rule of Three

The same question inverted If a family of 10
if 20 horses eat 70 bushels of malt in a month how
of oats in three weeks many bushels will serve
how many bushels will there be when there are 30
horses eat in the same
time

horses
20, 70. 6
6

10. 3, 30

3
10 30 9 bushels
100

20) 420 (21
40
20
20
20

If a family of 30
persons spend 9 bushels
of malt in a month how
many bushels will serve
a family of 10 persons
the same time

3 if an ingot of silver
weigh 36 oz, 10 pwt, what
is it worth at 55 per
ounce

30. 9, 10

9
30 90 3 bushels
100

oz, pwt
9. 5. 36, 10
20
20
730 pwt

20) 3650 (182
40
765
160
30
40
10
12
20) 120 (6

Net Goldsmith's sold a
tankard for £10, 12s, at
the rate of 5s, 4d, per
ounce I demand the weight
of it

5s, 4d, 10s, 20s, 12s
12 20 20
64 20 20
12

257 4 20 19 3
6930 4 60 19 3
448 3 9 15
608
5 16
3 20
3 20
3 20

Continued

Sp 12 acres 3 rods produce 18 quarters 3 pecks how much will 35¹/₂ acres 1 rod 20 poles produce

$$\begin{array}{r}
 12, 3, \quad 18, 3, \quad 35, 1, 20 \\
 \underline{1} \quad \quad \quad \underline{4} \quad \quad \quad \underline{4} \\
 51 \quad \quad 159 \quad \quad 141 \\
 40 \quad \quad 40 \quad \quad 40 \\
 2040 \text{ poles} \quad 2499 \text{ poles} \quad 5660 \text{ poles} \\
 \underline{2499} \quad \quad \underline{2499} \quad \quad \underline{2499}
 \end{array}$$

$$\begin{array}{r}
 50940 \\
 50940 \\
 22640 \\
 11320 \\
 2040 \overline{) 11144340} \text{ (1) } 6933 \\
 \underline{12240} \quad \quad \quad \underline{5} \overline{) 17333} 1 \text{ pk} \\
 19043 \quad \quad \quad \underline{21653412} \text{ pk} \\
 18360
 \end{array}$$

$$\begin{array}{r}
 6534 \\
 6120 \\
 4140 \\
 6120 \\
 \underline{1020} \text{ pk} \\
 1020 \overline{) 2040} \text{ pk}
 \end{array}$$

Sp 5¹/₂ acres 1 rod produce 26 quarters 2 bushels how many acres will be required to produce 47 quarters 4 bushels

$$\begin{array}{r}
 26, 2, 5, 1, \quad 47, 4 \\
 \underline{8} \quad \quad \quad \underline{4} \quad \quad \quad \underline{8} \\
 210 \quad \quad 21 \quad \quad 340 \\
 \underline{21} \quad \quad \quad \underline{21} \quad \quad \quad \underline{21}
 \end{array}$$

$$\begin{array}{r}
 340 \\
 760 \\
 210 \overline{) 7980} \text{ (1) } 34 \\
 \underline{630} \quad \quad \quad \underline{21} \text{ acres} \\
 1680 \quad \quad \quad \underline{91} \text{ 2 rods} \\
 1680 \\
 \underline{6000}
 \end{array}$$

if one third of six be three what 23.5 will be fourth of 20 be

$$\begin{array}{r}
 3 \\
 21 \overline{) 72} \\
 \underline{14}
 \end{array}$$

Single Rule of Three Direct

If 365 men consume 75 barrels of provision in 9 months how much will 500 men consume in the same time

$$\begin{array}{r}
 365 \cdot 75 \cdot 500 \\
 75 \\
 \hline
 2500 \\
 3500 \\
 362 \overline{) 37500} \quad 102 \frac{2}{3} \\
 \underline{365} \\
 1000 \\
 730 \\
 5 \overline{) 270} \quad 2 \frac{4}{5} \\
 \underline{365} \quad 73
 \end{array}$$

If 500 men consume $102 \frac{2}{3}$ barrels of provisions in 9 months how much will 365 men consume in the same time

Multiply by $102 \frac{2}{3}$ the denominator of the fraction

$$\begin{array}{r}
 306 \\
 714 \quad \text{the numerator} \\
 54 \\
 500 \quad 7500 \quad 365 \\
 7500 \\
 782500 \\
 2555 \\
 500 \overline{) 2737500} \quad 5475 \\
 \underline{500} \\
 73 \overline{) 273750} \quad 375 \\
 \underline{73} \\
 511 \\
 365 \\
 365 \\
 200
 \end{array}$$

Single Rule of Three Direct

If I give 6 dollars for the use
 of 100, doll's for 12 months what must
 I give for doll's 357.82 the same
 Length of time

$$\begin{array}{r}
 100 \quad 6 \quad 357.82 \\
 2146.92 \overline{) 2146.92} \\
 \underline{200} \\
 146 \\
 \underline{100} \\
 469 \\
 \underline{400} \\
 692 \\
 \underline{600} \\
 920 \\
 \underline{900} \\
 20 \\
 \underline{20} \\
 0
 \end{array}$$

How much Land at \$ 2.50 per acre
 should be given in exchange for 360
 acres at \$ 3.75 per acre

$$\begin{array}{r}
 \$ 2.50, 360, 3.75 \\
 1360 \\
 22500 \\
 1125 \\
 25013500 \text{ Acres} \\
 1250 \\
 1000 \\
 100000
 \end{array}$$

Single Rule of Three Direct

If I buy 126 lb of sugar for 75 cts
how much can I buy for 6 dolls

75 7. 600

75 7. 600
375
450
450
75

If I buy 75 yards of cloth for
\$ 113.17. what did it cost per ell
inglish

76 113.17 5 quarters
304

304 565.85 1286.1

304
2618
2432
1865
1824
0410
304
106

A Man spends \$ 3.25 per week what
is that per annum

7) 1156.25 169.46

7. 3. 25. 365

325
1425
730
1095
1186 25

48
42
66
62
32
28
32
30
2

Single Rule of Three Direct

Bought a silver cup weighing 9oz, 4 pwt, 16 grs
for £3, 2s, 3d, 3gr, what was that per ounce

9, 4, 16	3, 2, 3, 3 ³
<u>20</u>	<u>20</u>
184	62
24	12
<u>752</u>	<u>127</u>
363	127
4432 pwt	747
	4
	2775
	14750 3 of a farthing
	14758 1 ounce
	480
	480 pwt
4432,	14758
	480
	1126640
	57832
	57832
4432/7777	(5) 20 3
4432	1324
27178	1381
26592	69d
8864	
88640	

Q, merchant

J, merchant bought 210 quintals
of cod fish for \$700 freight
\$37, 76, duties and other charges
\$30, 60 quintal to gain \$148 in the
whole \$848, 30

143
279991, 3 93, 6 7, 1
1890
1813
1620
1930
18200
400
476
13

Single: Rule of Three Direct

3rd

If a staff 5 ft 8 in in length cast
a shadow of 6 feet; how high is that
steeple whose shadow measures 153 feet

5, 5 ft 8 in 153 ft

$$\begin{array}{r}
 12 \\
 5, \overline{63} \quad 153 \\
 \quad \quad 63 \\
 \quad \quad \underline{1224} \quad 12 \\
 \quad \quad 918 \\
 6 \overline{) 10404} \quad (173\frac{1}{2} \\
 \quad \quad 6 \\
 \quad \quad \underline{44} \\
 \quad \quad 420 \\
 \quad \quad \quad 18 \\
 \quad \quad \quad \underline{24} \\
 \quad \quad \quad 220
 \end{array}$$

Bought 12 pieces of cloth each
10 yards at \$1.75 per yard what
came they to

$$\begin{array}{r}
 1 \quad 1.75 \quad 120 \\
 \quad \quad \underline{1.75} \\
 \quad \quad 600 \\
 \quad \quad 840 \\
 \quad \quad \underline{1200} \\
 \quad \quad 21.00
 \end{array}$$

Single Rule of Three

Bought 4 pieces of holland each
containing 24 yds english for 898. how
much was that per yard

$$\begin{array}{r}
 24 \text{ yds} \\
 \underline{4} \\
 96 \\
 \underline{5} \\
 480
 \end{array}
 \qquad
 \begin{array}{r}
 46 \\
 \underline{4} \\
 184
 \end{array}
 \qquad
 \begin{array}{r}
 4 \\
 \underline{4} \\
 0
 \end{array}$$

184) 3540, 80,
 $\begin{array}{r} 3540 \\ 3540 \\ \hline 0000 \end{array}$

Bought 9 chests of tea each
weighing 36, 29rs 21 lb at 24. 75. per
cwt what came they to

The sum will be found over
the cap

Continued

$$\begin{array}{r}
 30, \quad 24, \quad 25 \quad 43695 \\
 \underline{4} \quad \quad \quad 20 \\
 14 \quad \quad \quad 89 \\
 \underline{25} \\
 413 \\
 \underline{9}
 \end{array}$$

$$3717 / 112 \quad 89, \quad 3717 \quad 89^{(20)}$$

$$\begin{array}{r}
 112 \overline{) 330813} \quad (2953, \\
 \underline{224} \quad \quad \quad 2953, \quad 8 \frac{1}{4} \\
 1068 \\
 \underline{1068} \\
 601 \\
 \underline{560} \\
 413 \\
 \underline{336} \\
 77 \\
 \underline{12} \\
 154 \\
 \underline{77} \\
 112 \overline{) 92428} \\
 \underline{896} \\
 28 \\
 \underline{28} \\
 4 \\
 \underline{4} \\
 1151121 \\
 \underline{112} \\
 300
 \end{array}$$

A Bankrupt owes in all \$942
 and his money and effects are but
 \$607.50; what will a creditor
 receive on \$11,333

Sum

$$\begin{array}{r}
 97200, \quad 11,333 \quad 607,50 \\
 \quad \quad \quad 11,333 \\
 \hline
 \quad \quad \quad 182250 \\
 \quad \quad 182250 \\
 \quad 182250 \\
 \quad 60750 \\
 \quad 60750 \\
 97200) 680477750 \quad 21,003 \\
 \quad \quad 680400 \\
 \hline
 \quad \quad \quad 807775 \\
 \quad \quad 177600 \\
 \quad \quad \quad 303750 \\
 \quad \quad \quad 291600 \\
 \hline
 \quad \quad \quad 12156
 \end{array}$$

2 H owes 3 £3475 but 3 compounds
with him for 138 4d on the ground
what must he receive for his debt

138 4d

$$\begin{array}{r}
 \text{up } 160 \quad \frac{13}{160} \quad 3475 \\
 \quad \quad \quad 160 \\
 \hline
 \quad \quad \quad 25800 \\
 \quad \quad 3475 \\
 \hline
 \quad 12156000 \\
 20) 46333-4 \\
 \hline
 \quad 22316+1384d
 \end{array}$$

Continued

If a person whose rent is \$145[✓]
 pays \$12.63 of parish taxes how
 much should a person pay whose
 rent is \$378³

doll of cts
 135[✓] 12, 63 378
 378

10104
 8841
 3789
 145)4774 1432, 92, 5[✓]
 455

424
 290
 1341
 1305
 364
 270
 740
 725
 15

Single Rule of Three Inverse

The single rule of three inverse teaches
by having three numbers given to find
a fourth having the same proportion to
the second as the first has to the third

Rule

Put the and reduce the terms as in the rule of
three direct then multiply the first and second
terms together divide the product by the third and
the quotient will be the answer in the same dimen-
sion with the second

Example

If a board be 9 inches broad how
much in length will make a square foot

$$\begin{array}{r} 12, 12, 9, 16 \\ 12 \\ \hline 11 \frac{1}{4} 16 \text{ Ans} \\ 54 \\ 54 \\ \hline 20 \end{array}$$

How many yards of sarcenet
3 qrs wide will line 9 yards of
cloth of 4 qrs wide

$$\begin{array}{r} 8, 9, 3 \\ 8 \text{ yds. Ans} \\ \hline 3 \frac{1}{2} 24 \\ 6 \\ 12 \\ 12 \\ \hline 1 \end{array}$$

Continued

Lent a friend 212 dollars for 6 months: same time afterwards he lent me 506 dollars how long may I keep it to balance the former debt.

doll. months doll.
292 6 506

806 $\overline{) 752}$ 2 months 5 days
1612
140
30
1200 5
1136
170

* Garrison had

A garrison had provision for 6 months at the rate of 15^{rs} to each person per day how much must be allowed per day in order that the provision may last $\frac{7}{12}$ months

8. 15 9 $\frac{1}{2}$
12 $\overline{) 206}$ 17 halves
112 12 12
6
12

Single Rule of Three Direct

Bought 126 gallons of rum for
\$ 110, how much water must be added
to it to reduce the first cost to 75c
cents per gallon

$$\begin{array}{r} 126 \\ 75 \\ \hline 630 \end{array}$$

$$\begin{array}{r} 6820 \\ 9450 \end{array}$$

$$\begin{array}{r} 126 \text{ cholls} \\ 110 \\ \hline 11000 \\ 126000 \end{array}$$

$$\begin{array}{r} 1260000 (146\frac{2}{3} \\ 9450) 1386000 \\ \underline{9450} \quad 126 \\ 44100 \text{ am } 20\frac{2}{3} \\ \underline{37800} \\ 63000 \end{array}$$

$$\begin{array}{r} 2) 6300 \\ 3150 \\ \hline 3150 \end{array}$$

$$\begin{array}{r} 56700 \\ \underline{6300} \\ 56700 \end{array}$$

Single Rule of Three Reverse
 A garrison of 1200 has provision for 9 months at the rate of 1402 per day
 how long will the provisions last at the same allowance if the garrison be reinforced by 400 men

$$\begin{array}{r}
 1200 \quad 9 \quad 1600 \\
 1600 \overline{) 10800} \quad 6 \\
 \underline{9600} \\
 1200 \quad 3 \\
 400 \overline{) 1600} \quad 4
 \end{array}$$

How must the daily allowance be in order that the provisions may last 1 month after the garrison is reinforced

$$\begin{array}{r}
 1200 \quad 14 \quad 1600 \\
 1600 \overline{) 16800} \quad 10 \frac{1}{2} \\
 \underline{16000} \\
 800 \quad 1 \\
 400 \overline{) 800} \quad 2
 \end{array}$$

If a man perform a journey in 15 days when the day is 12 hours long in how many days will he do it when the day is but 10 hours

$$\begin{array}{r}
 12 \quad 15 \quad 10 \\
 15 \\
 10 \overline{) 80} \quad 16 \text{ days} \\
 \underline{60} \\
 20
 \end{array}$$

1) If a piece of land 40 rods in length
and 4 in breadth make an acre how wide
must it be when it is but 25 rods long

$$\begin{array}{r} 40 \quad 4 \quad 25 \\ 25 \overline{) 160} \quad 6 \frac{2}{5} \text{ ans} \\ \underline{150} \\ 10 \quad 25 \\ 5 \overline{) 25} \quad 5 \end{array}$$

There was a certain building raised in 8
months by 120 men but the same being
demolished it is required to be built in
2 months. Demand how many men must
be employed about it

months men months

8 120 2

$$\begin{array}{r} 2 \overline{) 160} \quad 480 \text{ men} \\ \underline{16} \\ 160 \end{array}$$

How much in length that is 3
inches broad will make a square foot

$$\begin{array}{r} 12 \\ 12 \\ 3 \overline{) 36} \quad 3 \text{ long} \\ \underline{12} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

There is a cistern having 1 pipe
which will empty it in 10 hours. How
many pipes of the same capacity will
empty it in 24 minutes

$$\begin{array}{r}
 10 \\
 24 \overline{) 600} \quad 25 \text{ : } 4, \quad 24 \\
 \underline{48} \\
 120 \\
 \underline{120} \\
 00
 \end{array}$$

If a field will feed 6 cows 21
days how long will it feed 21 cows

$$\begin{array}{r}
 6 \quad 21 \quad 21 \\
 21 \overline{) 126} \quad 26 \text{ days} \\
 \underline{126} \\
 00
 \end{array}$$

If my horse and saddle are worth 18
Guineas, and my horse be worth six times
so much as my saddle, pray what is my
The value of my horse

$$\begin{array}{r}
 18 \text{ shillings} \\
 25 \\
 144 \\
 36 \\
 6) 504 \quad 84 \text{ shillings} \\
 \underline{48} \\
 24 \\
 \underline{24} \\
 00
 \end{array}$$

100 12 6
 100 16
 6 12
 400 12 2 months
 12 12 6 6 6
 2400 12 12 6 6 6
 12 12 6 6 6

60 cts 5 years 204
 18 1000
 5
 5000
 60 cts
 3672 miles
 41, 6
 3672
 29376
 1240
 3672
 25680
 22052
 3628

3620

Supplement to the Double Rule of Three
If 7 men can reap 84 acres in 12 days how many men can reap 100 acres in 5 days

	12.	84	7
of	5.	100	men
		<u>420</u>	
		420	
		<u>840</u>	
		840	
		<u>840</u>	
		840	

6 men build a wall 20 feet long
 20 feet high and 4 feet wide in 15 days
 in what time will 24 men build one 200
 feet long 8 feet high and 6 thick in 40 days

6	20	200
	6	8
	<u>120</u>	<u>1600</u>
	4	6
	<u>480</u>	<u>9600</u>

6	16	480	480
24		9600	24
		<u>6</u>	<u>1920</u>
		57600	260
		16	<u>17520</u>
		<u>355600</u>	
		57600	
		<u>57600</u>	
		921600	
		<u>92160</u>	
		829440	

11520) 829440 50 40 days

If the freight of 12 cut 2 gr 6 Lb, 275
 miles costs \$24.78 how far may 50 cut 3 gr
 be shipped for \$234.78 miles

12 cut 2 gr 6 Lb 275	3/27.78
	5/234.78
4	
50	
20	
406	
1006	
1406	

reduced to pounds; secondly 60, 30

253
18
<u>1765</u>
486
<u>6825</u>

Practice

Extral of the square

Root

100046 128 over

100046

1234	123456789	10002
1234		6
	05678	
	3908	
	3276	
	4136	
	7529	

Remainder

Asa Fitch or his order the sum of twenty Pound
bills one to be paid in Hand

7404
125

Asa Fitch

Natick January 13 1841

my Childbrary take my pen to inform you that we are
all well and hope

Tom Freeman Money Book

Freeman Money Book

